



**US Army Corps
of Engineers®**

Engineer Research and
Development Center

**BROAD AGENCY ANNOUNCEMENT
PEM FUEL CELL DEMONSTRATION
DACA42-02-R-0010**

FEBRUARY 2002

**VICKSBURG CONSOLIDATED CONTRACTING OFFICE
CHAMPAIGN FIELD OFFICE
2902 Newmark Drive
Champaign, IL 61822-1076**

PREFACE

The Construction Engineering Research Laboratory (CERL) is part of the U.S. Army Engineer Research and Development Center (USAERDC), which is the Army Corps of Engineers' integrated research and development (R&D) organization. CERL conducts research to support sustainable military installations. Research is directed toward increasing the Army's ability to more efficiently construct, operate, and maintain its installations and ensure environmental quality and safety at a reduced life-cycle cost. Excellent facilities support the Army's training, readiness, mobilization, and sustainability missions. An adequate infrastructure and realistic training lands are critical assets to installations, which serve as platforms to project power worldwide. CERL also supports ERDC's R&D mission in civil works and military engineering.

CERL works closely with its Army customers to develop quality products and services and to help customers implement new technologies. User groups and steering committees have been established to help identify existing problems, establish research priorities, and provide input into the development of products. Many CERL products developed under this teamwork approach are in daily use, both within the Department of Defense (DoD) and the private/public sectors. An active technology transfer program ensures these products receive the widest dissemination among prospective users.

The provisions of the Competition in Contracting Act of 1984 (P.L. 98-369) as implemented in the Federal Acquisition Regulation provide for the issuance of a Broad Agency Announcement (BAA) as a means of soliciting proposals for basic and applied research, and that part of development not related to the development of a specific system or hardware procurement. BAAs may be used by agencies to fulfill their requirements for scientific study and experimentation directed toward advancing the state-of-the-art or increasing knowledge or understanding rather than focusing on a specific system or hardware solution. The BAA shall only be used when meaningful proposals with varying technical/scientific approaches can be reasonably anticipated.

“Basic Research” is defined as research directed toward increasing knowledge in science with the primary aim being a fuller knowledge or understanding of the subject under study, rather than any practical application of that knowledge. “Applied Research” is the effort that normally follows basic research, but may not be severable from the related basic research; attempts to determine and exploit the potential of scientific discoveries or improvements in technology, materials, processes, methods, devices, or techniques; and attempts to advance the state-of-the-art. This announcement must be general in nature, identify the areas of research interest, include criteria for selecting proposals, and solicit the participation of all offerors capable of satisfying the Government’s needs. The proposals submitted under this BAA will be subject to peer or scientific review. Proposals that are selected for award are considered to be the result of full and open competition and in full compliance with the provisions of P.L. 98-369, the Competition in Contracting Act of 1984.

This guide provides prospective offerors information on the preparation of proposals for applied research. Suggestions as to form and procedures are included. Proposals from U.S. Government facilities and organizations will not be considered under this program announcement. **PERSONS SUBMITTING PROPOSALS ARE CAUTIONED THAT ONLY A CONTRACTING OFFICER MAY OBLIGATE THE GOVERNMENT TO ANY AGREEMENT INVOLVING EXPENDITURE OF GOVERNMENT FUNDS.**

This BAA is specifically designated for proposals related to a Proton Exchange Membrane (PEM) Fuel Cell Demonstration Of Domestically Produced Residential PEM Fuel Cells in Military Facilities. This BAA is open to all offerors, however, offerors who are not residential PEM fuel cell manufacturers must submit a signed letter of agreement from a residential PEM fuel cell manufacturer which states that the

particular manufacturer will sell a specified number of specified sized units to the particular offeror. Only domestically-produced residential PEM fuel cells between the sizes of 1 kilowatt (kW) and 20 kW will be considered in this BAA. Pre-proposals received under this announcement must be submitted by 29 March 2002 for awards to be made from the anticipated FY2002 funding (approximately \$3 million). All awards are subject to the availability of funds from the anticipated funding for FY2002. This announcement shall remain open for a period of up to one year or until superseded. However, proposals received after 29 March 2002 may be delayed in their review and correspondence.

All offerors submitting a proposal under this BAA must be registered and valid in the Central Contractor Registration (CCR) system at <http://www.ccr2000.com> before an award can be made. In addition, all offerors, by submission of an offer or execution of a contract in response to this solicitation, certify that they are not debarred, suspended, declared ineligible for award of public contracts, or proposed for debarment pursuant to FAR 9.406-2. If an offeror cannot so certify, or if the status of the offeror changes prior to award, the offeror must provide detailed information as to its current status.

Offerors submitting proposals are reminded that all transactions conducted under this announcement shall conform with the requirements of the FAR and its supplements. Contracts awarded by CERL will contain, where appropriate, detailed special provisions concerning patent rights, rights in technical data and computer software, reporting requirements, equal employment opportunity, and all other applicable FAR and supplementary clauses.

Please contact Mrs. Rita Brooks of the Vicksburg Consolidated Contracting Office, Champaign Field Office, at (217)373-7280 or via email at r-brooks@cecer.army.mil if you have any questions concerning submittal or contractual requirements.

PART I

PROTON EXCHANGE MEMBRANE (PEM) FUEL CELL DEMONSTRATION OF DOMESTICALLY PRODUCED RESIDENTIAL PEM FUEL CELLS IN MILITARY FACILITIES

A. Core Requirement: The core requirement of this BAA is for the offeror to supply a turn-key package for the installation, operation, maintenance, monitoring, and option for removal/site restoration of domestically-produced residential PEM fuel cell(s) at military facilities. Beyond this core requirement, the offeror must state which conditions from the included matrix of parameters in Part I, Section C below that they will satisfy. The goal of this demonstration program is to have as much variety and meet as many of the matrix of parameters as possible, therefore multiple awards are anticipated. Offerors are encouraged to propose the installation of multiple units at multiple sites. Although this program is named “residential,” the sites do not necessarily need to be dwellings as long as the load matches.

B. Core Requirement Definitions:

1. Domestically Produced Residential Fuel Cells – Only units between the sizes of 1 kW and 20 kW will be considered. If individual packaged units are combined together to form a larger unit, the individual packaged units must be between the sizes of 1 kW and 20 kW. “Domestically produced” is defined as the power plant (s) being substantially manufactured in the United States (i.e., at least 50 percent of the value of the components must be produced in the United States, and the unit must be assembled in the United States).

2. Military Facilities – Army, Air Force, Navy, Marine, and Coast Guard facilities, both active and reserve, are all acceptable host sites for the demonstration. Remote sites located on military installation grounds are also acceptable. Military or DoD related sites not included in this list will be considered on a case-by-case basis.

3. Installation of Unit(s) – The offeror shall install the unit(s) with full cooperation and consideration of the host military site(s), abiding by any safety, scheduling, or other requirements imposed by the site(s). The offeror will be responsible for any siting, permitting, or interconnect issues. Installation of the unit(s) will be complete when the offeror has completed a documented on-site acceptance test demonstrating the capability to produce power (and heat, if cogeneration is present) as per the manufacturer’s specifications. The acceptance test will include a one-time measurement of total harmonic voltage distortion while providing power to the site under normal load conditions.

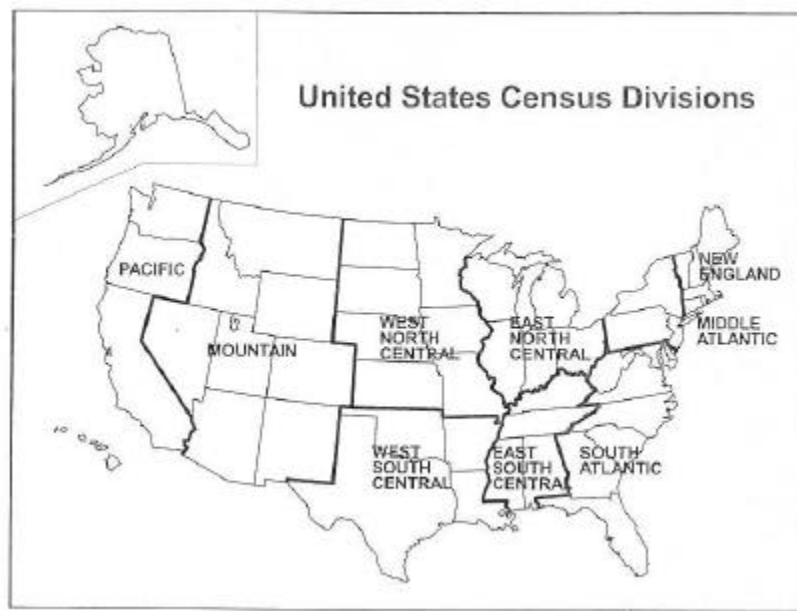
4. Operation of Unit(s) – The offeror shall operate the unit(s) at the host military site(s) and obtain a minimum of one (1) year of fuel cell power. Fuel cell power is defined as the host required power output up to the specified output of the fuel cell at an average availability of 90%.

5. Maintenance of Unit(s) – The offeror shall provide reasonable on-site maintenance to the installed unit(s) as required to meet any operational, safety, scheduling, etc. requirements. If the unit(s) are beyond any on-site repair, replacement unit(s) will be furnished and installed. A log of maintenance activities performed will be required as part of the final report. Specifically, for any service activities, the maintenance personnel should record the date, time of arrival and departure from the site(s), and any applicable notes that relate to the repairs or actions undertaken while at the site(s).

6. Monitoring of Unit(s) – The offeror shall monitor all units at all sites during the demonstration period. Data shall be recorded, analyzed, and presented in the form of a report at the end of the demonstration period. As a minimum, the parameters which shall be monitored include total operating hours, fuel input, total kW hours (kWh) produced, availability, outages and duration (start/stop events with associated dates and times), maximum kW produced, outdoor ambient temperature, and total heat recovered (only if cogeneration is present) Data from the above parameters shall be collected on intervals of one hour or less. Offerors are encouraged to propose additional data collection in order to provide more detailed performance analyses of the unit(s).

7. Option for Removal/Site Restoration – The offeror shall include in the proposal an option for removing the unit(s) at the site(s), as well as restoration of the site(s), after the completion of the demonstration period or at the request of the Government, whichever occurs first.

8. Geographic Regions – The offeror shall identify in the pre-proposal, at a minimum, the geographic region(s) they are willing to perform the demonstration at. States and specific cities may be identified, if applicable. Geographic regions from the illustrated US Census Map below include the following: Continental United States (CONUS) regions – New England, Middle Atlantic, South Atlantic, East North Central, West North Central, East South Central, West South Central, Mountain, and Pacific (which includes Alaska and Hawaii). Outside of the Continental United States (OCONUS) regions can be specified by Country and/or City.



C. Matrix of Offeror Specified Parameters:

Under this BAA, as long as the Core Requirements are first met, offerors must then specify the parameters under which they agree to perform individual project(s) from the following matrix:

| | | | |
|---|--|---------------------------------|---|
| Fuel Natural Gas Propane Hydrogen Other | Grid Connect Grid Independent Both (alternating) | Cogeneration No Cogeneration | Altitude Sea Level < 500 ft 500 ft < 1250 ft 1250 ft < 4000 ft 4000 ft < 5280 ft > 5280 ft |
| Single Units Ganged Units | Fuel Switching No Fuel Switching Fuel Blending | Remote Site? | Hybrid System? |
| Own/Lease Unit | Maximum/Minimum Temperature Restrictions? | | |

D. Deliverables: Beyond the turn-key package described above, the successful offerors will be required to submit documentation of the projects. Offerors shall include in their proposal, as a minimum, submission of the following documentation in electronic format (Word for reports and summary data, Excel for raw data, etc.):

1. An Initial Project Description Report which includes information regarding the site(s), the specific building or other application(s), the site(s) points of contact (POCs), digital pictures of the site(s) along with the building(s) or area(s) where the fuel cells are to be installed, utility rates at the site(s), and an estimate of the energy savings (electric energy and demand savings plus heat energy (if any) savings minus input fuel cost). As an example of the type of information required, refer to the DoD Fuel Cell Demonstration Website at <http://www.dodfuelcell.com> and the individual site information located within. The Project Description report shall be submitted within 4 months of award of any applicable contract awarded as a result of a proposal received under this BAA.

2. A Midpoint Project Status Report shall be submitted within two months after the fuel cell(s) are installed at the particular site(s). The midpoint Project Status Report shall contain digital pictures of the installed fuel cell(s), documentation of the installation process including the duration and other pertinent parameters, and documentation of the acceptance test of the fuel cell.. This report shall also include the performance monitoring data collected as well as a month by month summary of this data.

3. A Final Report shall be developed at the end of the project after one full year of fuel cell power has been delivered at the individual site(s). The Final Report shall contain the complete documentation of the project, to include material from the initial Project Description Report and the midpoint Project Status Report, as well as all maintenance logs, all performance monitoring data and a month by month summary of this data, along with a conclusions section. The Final Report shall be submitted within two months after the end of the demonstration period.

PART II

PRE-PROPOSAL AND PROPOSAL PREPARATION AND SUBMISSION

A. BAA Process: Response to this BAA is a two-phase process. All offerors are required initially to submit a phase I pre-proposal. CERL staff will review each pre-proposal to determine if further consideration is warranted. This decision will be based on scientific merit; potential contribution to the CERL mission; the offeror's capabilities, qualifications and experience; and availability of funding for the effort. Upon completion of the initial review, each offeror will be notified either of rejection and the rationale for this decision; or encouraged to submit a phase II, full proposal. This part is intended to provide information needed in preparing phase I and phase II proposals. **It is important that the offeror carefully address the requirements of this section.** Omissions of required information may delay the CERL evaluation, or may result in rejection of a proposal.

B. Points of Contact (POCs) The CERL technical POCs for this BAA are Dr. Michael Binder, (217)373-7214, and Mr. Frank Holcomb, (217)352-6511, ext. 7412. Prior to submission of a phase I pre-proposal, prospective offerors are encouraged to call the appropriate CERL POC to ask questions of a technical nature. However, offerors **shall not** discuss cost or seek guidance on the direction that the research project should take. In other words, the offer submitted shall be the offeror's own ideas and may not be influenced by the Government. After submission of a pre-proposal, all questions and requests for assistance must be directed to the Contracts Office, to Mrs. Rita Brooks at (217)373-7280 or Mrs. Deloras Adamson at (217)373-7297. In addition, any questions regarding the BAA process or proposal preparation and submission shall be directed to the Contracts Office.

C. Submission Address The Government requests that all pre-proposals and full proposals be submitted via electronic mail (Word format is preferred) to r-brooks@cecer.army.mil, and that they include a reference to this announcement, No. DACA42-02-R-0010. If a paper form is submitted, or for printed brochures, etc., they may be mailed to:

Vicksburg Consolidated Contracting Office
ATTN: Campaign Field Office/Mrs. Rita Brooks
P. O. Box 9005
Champaign, IL 61826-9005

or via express mail services to the following :

Vicksburg Consolidated Contracting Office
ATTN: Campaign Field Office/Mrs. Rita Brooks
2902 Newmark Drive
Champaign, IL 61822-1076

D. Type of Contract: It is anticipated that all contracts awarded under this BAA will be issued on a firm fixed-price basis. This type of contract is selected when the project costs can be reasonably estimated, and the services to be rendered are reasonably definite. In this type of contract, the negotiated price is not subject to any adjustment on the basis of the Contractor's cost experience in performing the contract. The offeror shall specifically identify any request for issuance of a contract on other than a firm fixed-price basis (e.g., cost-sharing) and identify the rationale for such request.

E. Pre-proposal Format and Requirements: Valid pre-proposals shall be limited to a brief letter, not to exceed six (6) pages (not including the curriculum vitae and/or resume), and shall contain the following information:

1. A descriptive title of the research proposed;
2. The name and address of the individual, company, or educational institution submitting the pre-proposal;
3. The name and phone number of the principal investigator or senior researcher who would be in charge of the project;
4. Product specifications and descriptions of the proposed fuel cell(s), and an estimated factory production schedule (required from both fuel cell manufacturers and non-fuel cell manufacturers). Please note that only domestically-produced residential PEM fuel cells between the sizes of 1 kW and 20 kW will be considered in this BAA;
5. The proposed start date and duration of the project;
6. The estimated costs, including but not limited to labor, materials, fringe benefits, overhead, and profit (if any);
7. One or more paragraphs describing the proposed project to include the core requirements specified above; the proposed site or geographic region for installation along with the corresponding number, size, manufacturer(s), and model(s); the specific conditions to be addressed from the matrix identified above; and whether or not a military installation has been contacted and is amenable to becoming a host site. (The Government will provide the offeror with the name of any installation's energy manager, upon request.);
8. One or more paragraphs describing the technical approach to be taken in the course of the research. This shall include installation, operation, maintenance, monitoring, and removal/site restoration, and an estimated timetable of events;
9. A one-page only resume/vitae for each principal investigator and/or key personnel who will be involved with the project.
10. A description of the offeror's capabilities and previous experience as related to fuel cells. Include the agency the work was performed for, contract number, dollar value, and the name of a point of contact, phone and/or email address. (No more than two pages in length.)

F. Full Proposal Format and Requirements:

1. Full proposals will be accepted only upon request from the Vicksburg Consolidated Contracting Office, as the direct result of a favorably evaluated pre-proposal.
2. Full proposals shall include a more detailed description of all the information submitted with the pre-proposal, including the specific sites, along with any additional information requested by the Government based on review of the pre-proposal. This shall include a complete discussion stating the background and objectives of the proposed work, the approaches to be considered, the proposed level of effort and the anticipated results/products in terms of benefit to the particular research program. Full

proposals shall also include a firm timeline or project schedule and a complete description of the fuel cell units.

3. The technical portion of the full proposal shall also contain the following:

a. An indication that the offeror is a manufacturer of residential PEM fuel cells, or a letter of agreement from a residential PEM fuel cell manufacturer which states that the particular manufacturer will sell a specified number of specified sized units to the particular offeror. In addition, the proposal shall include a paragraph describing the manufacturing capability of the manufacturer (number of units per calendar year or similar);

b. Documentation regarding correspondence with potential host sites or copies of a letter or electronic mail from the military facility's energy manager equivalent or higher authority;

c. The names, brief biographical information, experience, education, and a list of recent publications of the offeror's key personnel who will be involved in the research;

d. A brief description of the offeror's organization;

e. A description of the reports and deliverables to be submitted; and

f. Past relevant performance information to include the name, address, point of contact, phone number, contract identification number, contract award date and amount, for a minimum of three (3) customers for whom the offeror has performed services in the last three (3) years.

4. The cost portion of the proposal shall contain a cost estimate sufficiently detailed by element of cost for meaningful evaluation. This cost estimate shall include the following, as applicable:

a. Fuel Cell Power Plant Cost - include an itemized list of equipment showing the estimated cost of each item, including documentation of catalog or market prices, if applicable

b. Power Plant Installation Cost - A complete cost breakdown of direct labor by discipline, function or position, hours proposed or percentage of time, hourly rate or salary, fringe benefit percentage rate and cost base. Also, include an itemized list of materials required;

c. Thermal Recovery Connection Costs, if any

d. Performance Monitoring Equipment Cost

e. Project Management/Report Writing Expenses - include reproduction costs, computer time, etc.

f. Maintenance Cost

g. Travel Costs - A complete breakdown of travel requested by the offeror to include airfare, rental car, per diem, location, number of trips, duration of trips, number of people/trip, etc.

h. Site Restoration Costs

i. Other Costs - Include in this category any miscellaneous piping, tanks, fuel (if required), delivery charges, description and cost of expendable supplies

j. A complete breakdown of any subcontracts, including the name and rationale for each selection. If the proposal is in excess of \$500,000, subcontracts are proposed, and the offeror is not considered a small or small and disadvantaged business concern, a subcontracting plan will be required prior to award in accordance with FAR 52.219-9;

k. Indirect cost rates and bases with a statement as to whether the rates are fixed or provisional and the time frame to which they apply; and

l. Proposed fee or profit, if any.

5. In addition to the technical and cost proposals, the following additional information is requested with each submission in response to a full proposal request:

a. The name, phone number, fax number, and email address of the offeror's authorized negotiators; and

b. The offeror's Data Universal Numbering System (DUNS) number, the Commercial and Government Entity (CAGE) Code, and Taxpayer Identification Number (TIN), if known.

PART III

PRE-PROPOSAL AND FULL PROPOSAL EVALUATION

A. Pre-proposal Evaluation: On receipt of a valid Phase I pre-proposal (not to exceed six pages), CERL staff will provide an initial review of the offers scientific merit; potential contribution to the CERL mission; the offeror's capabilities, qualifications and experience; and the availability of funds for the proposed research. Offerors who have submitted pre-proposals that merit further consideration will be encouraged to submit a Phase II full proposal. The Government may make recommendations for the full proposal that should be considered prior to submission.

B. Full Proposal Evaluation: Full proposals requested by the Government will be evaluated by CERL staff in accordance with the criteria specified below which are equally important. However, if all other factors are considered equivalent, the total proposal cost/installed kW rating of the fuel cells (criteria #1 below) will be the deciding factor. Upon completion of the evaluation, each offeror will be notified either of rejection, and the rationale for this decision, or of acceptance.

1. Total Proposal Cost / Installed kW rating of fuel cells;
2. The offeror's capabilities, related experience, facilities, techniques, or unique combinations of these that are integral factors for achieving the proposal objectives;
3. Reasonableness and Firmness of Production / Project Timetables. Preference will be given to projects with earlier completion dates;
4. Uniqueness of Proposal/Project;
5. Extent to which Offeror meets Core Requirements. In addition, preference will be given to offerors who have identified amenable host sites, as evidenced by submittal of a signed letter or electronic mail from the military facility's energy manager equivalent or higher authority.
6. The qualifications, capabilities, and experience of the principal investigator, team leader, and other key personnel who are critical to achievement of the proposal objectives; and
7. The offeror's record of past performance.

C. Special Evaluation Criteria: It is the intent of the Government to review and evaluate each proposal independently in the order received. Due to the limited resources available for FY2002 and the goals of achieving maximum diversity in conditions and operations, any of the criteria listed above may be superseded if diversification has not been met. For example, if proposals for fuel cells in all CONUS regions have already been selected and a proposal for an OCONUS region is received along with another CONUS region proposal, the OCONUS region proposal could potentially be selected over the CONUS region proposal, even if the Total Proposal Cost / Installed kW rating of the OCONUS proposal is higher than that of the CONUS proposal.

D. Additional Information: Pre-proposals and proposals not considered to have sufficient scientific merit or relevance to CERL's needs may be declined without further review. If a Full Proposal is accepted by the Government, the Contracting Office will prepare a solicitation document to the offeror which includes all the applicable clauses and requirements. If these terms are acceptable to the offeror,

they shall complete and return copies of the solicitation document as instructed. Offerors are cautioned that no contract is final until signed by an authorized Contracting Officer.